

We claim:

1. A computer implemented method of generating an enhanced profile of an individual entity, the profile including for each member of the individual entity, a single observation having at least one variable describing historical transactions pertaining to that member, the method comprising:

generating at least one single entity profile of an individual entity having individual members, from historical transactions of the members of the individual entity;

generating at least one multiple entity profile of at least one multiple entity defined by a combination including individual entities, from historical transactions that include the members of each of the individual entities included in a multiple entity; and

enhancing at least one single entity profile using at least one multiple entity profile to generate the enhanced profile.

2. The method of claim 1, wherein enhancing at least one single entity profile using at least one multiple entity profile further comprises:

merging at least one multiple entity profile with at least one individual entity profile that have a common member to produce a merged profile; and
rolling up a merged profile with respect to a selected one of the individual entities to produce the enhanced profile.


3. The method of claim/1, further comprising:

providing at least one of a single entity profile, an enhanced profile, or a multiple entity profile as an input into a predictive model for predicting a transaction pertaining to an entity included in the profile.

1 4. The method of claim 1, further comprising:
2 providing at least one of a single entity profile, an enhanced profile, or a multiple entity
3 profile as an input into to profile of a different entity.

1 5. The method of claim 1, further comprising:
2 deriving from at least one of a single entity profile, an enhanced profile, or a multiple
3 entity profile statistics which summarize transactions pertaining to an entity included
4 in the profile.

1 6. The method of claim 1, wherein each profile includes a plurality of variables, and
2 generating at least one single entity profile of an individual entity having individual members
3 further comprises:

4 for each member of an entity: 
5 determining a peer group of the member; and
6 normalizing at least one profile variable of the entity with respect to the
7 member's distance from other members in the member's peer group.

1 7. The method of claim 3, wherein a member's peer group is determined by a declared
2 specialty of the member.

1 8. The method of claim 3, wherein a member's peer group is determined by transactions
2 engaged in by the member.

1 9. The method of claim 1, wherein the entities are healthcare related entities.

1 10. The method of claim 1 wherein the entities include healthcare providers and
2 patients.

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1 19. The method of claim 10, wherein an entity profile of a provider entity includes a
2 single-day activity variable that measures a frequency and magnitude of very-high activity days
3 of a provider member.

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multiple applications of the direct profile process with respect to distinct entities,
including at least one multiple entity comprising a combination of individual entities,
to produce respective individual and multiple entity profiles;
an enhance process that enhances the profile of a first entity using a profile of a second
entity; and
at least one application of the enhance process to enhance the profile of a multiple entity
with the profile of a single entity by combining observations in the multiple entity
profile that have a common member in the single entity profile.

32. A computer implemented method of generating an enhanced profile of a 1st entity,
the 1st entity having a plurality of members, the enhanced profile of the 1st entity including for
each member of the 1st entity, a single observation having at least one variable describing
historical transactions pertaining to that member, the method comprising:
a direct profile process that generates a direct profile of an entity having members, from
historical transactions of the members of the entity;
an enhance process that enhances the profile of an entity using a profile of another entity
by combining portions of observations of the entities that have a common member;
multiple applications of the direct profile process with respect to the 1st, 2nd, and 3rd
entities to produce respective 1st, 2nd, and 3rd profiles, wherein the 3rd entity is a
combination of the 1st and 2nd entities;
an application of the enhance process on the profile of the 3rd entity with the profile of
the 2nd entity to produce an enhanced 3rd entity profile; and
an application of the enhance process on the profile of the 1st entity with the enhanced
profile of the 3rd entity.

33. A computer implemented system of generating an enhanced profile of a 1st entity,
the 1st entity having a plurality of members, the enhanced profile of the 1st entity including for

each member of the 1st entity, a single observation having at least one variable describing historical transactions pertaining to that member, the method comprising:

direct profile means for generating a direct profile of an entity having members, from historical transactions of the members of the entity,

enhancing means for enhancing the profile of an entity using a profile of another entity by combining portions of observations of the entities that have a common member;

and

means for applying the direct profile means and the enhancing means in parallel and serial applications with respect to 1st, 2nd, and 3rd entities to produce respective 1st, 2nd, and 3rd profiles, wherein the 3rd entity is a combination of the 1st and 2nd entities to produce direct profiles of the 1st, 2nd, and 3rd entities, and to enhance the profiles of the 1st entity using profiles of the 2nd and 3rd entities.

34. A computer implemented method of generating a profile of a entity, the 1st entity having a plurality of members, the enhanced profile of the 1st entity including for each member of the 1st entity, a single observation having at least one variable describing historical transactions pertaining to that member, the method comprising:

generating a 1st profile of a combination of a 1st and 2nd entity, from historical transactions pertaining to both the 1st and 2nd entities, the 1st profile including one observation for each combination of a member of the 1st entity and a member of the 2nd entity;

generating a 2nd profile of a combination of the 2nd and a 3rd entity, from historical transactions pertaining to both the 2nd and 3rd entities, the 2nd profile including one observation for each combination of a member of the 2nd entity and a member of the 3rd entity; and

13 enhancing the 1st profile using the observations of the 2nd profile that have a same
14 member of the 1st entity and the 2nd entity, to describe a statistical relationship
15 between the 1st entity and the 3rd entity.

1 35. A computer implemented method of generating a profile of an entity, comprising:
2 generating a profile of a 1st entity;
3 generating a profile of at least one 2nd entity that interacts with the 1st entity through
4 transactions with the 1st entity;
5 generating a profile of at least one 3rd entity comprising the combination of the 1st and 2nd
6 entity; and
7 enhancing the profile of the 1st entity with the profile of at least one 3rd entity.

1 36. A computer implemented method of generating a profile of an entity, comprising:
2 deriving a 1st profile of a 1st entity using transactions of the 1st entity;
3 deriving a 2nd profile of a 2nd entity that interacts with the 1st entity through transactions
4 with the 1st entity;
5 merging the 1st and 2nd profiles to create a merged profile;
6 deriving a new variable from other variables of the merged profile;
7 rolling up the merged profile with respect to the new variable.

1 37. A computer implemented method of generating a profile of an entity, comprising:
2 generating a profile of a 1st entity from historical transactions of the 1st entity, the profile
3 containing a plurality of variables;
4 receiving new transactions of the 1st entity; and
5 updating at least one variable of the profile of the 1st entity using only the at least one
6 profile variable and the new transactions, without using the historical transactions
7 from which the profile was generated.

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1 38. A computer implemented method of updating a profile of an entity, the profile
2 including for each member of the entity, a single observation having at least one variable
3 describing historical transactions pertaining to that member, the method comprising:
4 performing with respect to multiple distinct entities, multiple applications of a direct
5 profile process that generates a direct profile of an entity having members, from
6 historical transactions of the members of each of the entities, including at least one
7 multiple entity comprising a combination of individual entities, to produce respective
8 individual and multiple entity profiles;
9 at least one application of an enhance process to enhance the profile of a multiple entity
10 with the profile of a single entity by combining observations in the multiple entity
11 profile that have a common member in the single entity profile; and
12 receiving new transactions of the multiple entity; and
13 updating at least one variable of the profile of the multiple entity using only the at least
14 one profile variable and the new transactions, without using the historical
15 transactions from which the profile of the multiple profile was generated.

1 39. A computer implemented method of generating a profile of a first entity, the profile
2 including for each member of the first entity, a single observation having at least one variable
3 describing historical transactions pertaining to that member, the method comprising:
4 generating a first profile of the entity from historical transactions pertaining to the first
5 entity, the first profile including one observation for each member of the first entity,
6 the observation having at least one variable summarizing the historical transactions
7 of the member of the first entity;
8 generating a second profile of a second entity from historical transactions pertaining to
9 the second entity, the second profile including one observation for each member of

40. The method of claim 39, wherein enhancing the first profile using the enhanced third profile comprises:

- merging the observations from the first profile with observations of the enhanced third profile that have a same member of the first entity; and
- for each member of the first entity, rolling up all observations in the first profile for the member into a single observation having at least one variable describing interactions of the member of the first entity with respect to other members of the first entity.

1 41. The method of claim 39, wherein enhancing the third profile using the first profile
2 by combining observations from the first profile with observations from the third profile that
3 have a same member of the first entity, further comprises:
4 merging the observations of the third profile with observations of the first profile that
5 have a same member of the first entity; and
6 rolling up the observations in the merged third profile with respect to each member of the
7 first entity, to produce the enhanced third profile containing one observation for each
8 member of the first entity, the observation including at least one variable describing
9 the interaction of the member of the first entity with respect to members of the
10 second entity.

1 42. A computer implemented method of generating a profile of a Target entity, the
2 profile including for each member of the Target entity, a single observation having at least one
3 variable describing historical transactions pertaining to that member, the method comprising:
4 generating a Target profile of the Target entity from historical transactions pertaining to
5 the Target entity, the Target profile including one observation for each Target entity
6 member, the observation having at least one variable summarizing the historical
7 transactions of the Target entity member;
8 generating an entity A profile of a second entity A from historical transactions pertaining
9 to entity A, the entity A profile including one observation for each entity A member,
10 the observation including at least one variable summarizing the historical
11 transactions of the entity A member;
12 generating a T/A profile of a T/A entity comprising a combination of the Target entity
13 and entity A, from historical transactions pertaining to both the Target entity and A
14 entity, the T/A profile including one observation for each combination of a Target
15 entity member and an entity A member, the observation including at least one

16 variable describing the transactions of the Target entity member with respect to the
17 entity A member;
18 enhancing the T/A profile using the entity A profile by combining observations from the
19 T/A profile with observations from the entity A profile that have a same entity
20 member, to produce an enhanced T/A profile; and
21 enhancing the Target entity profile using the enhanced T/A profile by combining
22 observations from the Target profile with observations from the T/A profile that have
23 a same entity member, to produce the Target entity profile.

1 43. The method of claim 42, wherein enhancing the Target entity profile using the
2 enhanced T/A profile further comprises:
3 merging the observations from the Target profile with observations of the enhanced T/A
4 profile that have a same entity member; and
5 for each entity member of the Target entity, rolling up all observations in the Target
6 profile for the entity member into a single observation having at least one variable
7 describing interactions of the Target entity member with respect to other Target
8 entity members.

1 44. The method of claim 42, wherein enhancing the T/A profile using the entity A
2 profile further comprises:
3 merging the observations of the T/A profile with portions of the observations of the
4 entity A profile that have a same entity member; and
5 rolling up the observations in the merged T/A profile with respect to each entity A
6 member, to produce the enhanced T/A profile containing one observation for each
7 entity A member, the observation including at least one variable describing the
8 interaction of the T/A entity member with respect to entity A members.

45. A computer implemented method of generating a profile of a first entity, the profile including for each member of the first entity, a single observation having at least one variable describing historical transactions pertaining to that member, the method comprising:

generating a first profile of the entity from historical transactions pertaining to the first entity, the first profile including one observation for each member of the first entity, the observation having at least one variable summarizing the historical transactions of the member of the first entity;

generating a second profile of a second entity from historical transactions pertaining to the second entity, the second profile including one observation for each member of the second entity, the observation including at least one variable summarizing the historical transactions of the member of the second entity;

generating a third profile of a third entity comprising a combination of the first and second entity, from historical transactions pertaining to both the first and second entities, the third profile including one observation for each combination of a member of the first entity and a member of the second entity, the observation including at least one variable describing the transactions of the member of the first entity with respect to the member of the second entity;

generating a fourth profile of a fourth entity from historical transactions pertaining to the fourth entity, the fourth profile including one observation for each member of the fourth entity, the observation including at least one variable summarizing the historical transactions of the member of the fourth entity;

generating a fifth profile of a fifth entity comprising a combination of the first and fourth entity, from historical transactions pertaining to both the first and fourth entities, the fifth profile including one observation for each combination of a member of the first entity and a member of the fourth entity, the observation including at least one

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1 46. The computer implemented method of claim 45, wherein enhancing the first profile
2 using the enhanced third profile and the enhanced fifth profile further comprises:
3 merging the observations from the first profile with observations of the enhanced third
4 profile that have a same member of the first entity;
5 merging the observations from the first profile with observations of the enhanced fifth
6 profile that have a same member of the first entity; and
7 for each member of the first entity, rolling up all observations in the first profile for the
8 member into a single observation having at least one variable describing interactions
9 of the member of the first entity with respect to other members of the first entity.

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